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## TROPICAL FOREST NOTES

INSTITUTE OF TROPICAL FORESTRY  
RIO PIEDRAS, PUERTO RICO \*

No. 9

## SPHAGNUM MOSS AS A MEDIUM FOR ROOTING PINE SEEDLINGS

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There is an increased interest in growing pines in Puerto Rico and in other tropical countries. One of the difficulties is that the pines are never dormant, so do not transplant well barerooted.

Seedlings potted in soil are heavy and expensive to transport in large quantities, and the ball of earth may be disturbed by rough handling. The following study was carried out during 1960 at Rio Piedras to compare sphagnum moss, a light material, and several kinds of soil and potting materials.

Seeds of *Pinus hondurensis* Loock from British Honduras were sown in a sandy soil, and when the seedlings were about 3 inches tall they were transplanted to polyethylene bags 4 1/2 inches wide by 8 inches long filled with the following materials: (1) prepared nursery soil (filter press cake, soil, and sand); (2) equal parts of vermiculite and sandy loam; (3) Catalina clay soil, fertilized; (4) Catalina clay soil, not fertilized; (5) sphagnum moss, collected locally.

All the potting materials except number 4 were mixed with chemical fertilizer formula 5-10-10 at the rate of 40 grams for each group of 22 seedlings. At time of transplanting all seedlings were inoculated individually with soil containing abundant mycorrhizal material.

The data on the survival and average height of the seedlings 3 months after transplanting and height after 6 months are shown in Table 1 below:

Table 1. Survival and height of pine seedlings after transplanting

Potting materials	: Survival % :		: Height, inches :		Remarks
	: pH :	: at 3 months :	3 mo. :	6 mo. :	
Mixed nursery clay	8.0	5	4.0		Low in vigor
Catalina clay, not fertilized	6.5	80	3.2	4.4	Low in vigor
Catalina clay, fertilized	6.5	45	3.5	6.9	Low in vigor
Sandy loam and vermiculite	5.5	95	5.7	8.6	Very thrifty
Sphagnum moss		90	7.0	11.5	Very thrifty, superior to any

The poorest survival was in the mixed nursery soil, only 5 percent, followed by the fertilized Catalina clay with 45 percent. The remaining three treatments had a high survival.

\* Operated in cooperation with the University of Puerto Rico.



The seedlings growing in moss were about twice as tall as the seedlings growing in soil and were 23 percent taller than those growing in the mixture of sandy soil and vermiculite.

The average height after 6 months in the pots, at lifting time, showed similar differences. Seedlings in moss and in the sandy soil-vermiculite mixture grew highly significantly faster than seedlings in clay. Seedlings in fertilized clay grew faster than those in unfertilized clay, but the apparent difference between those in moss versus those in sandy soil-vermiculite was not significant.

Examination showed that pine roots grew much better in the moss and in the vermiculite than in the other media. Roots were more numerous, longer, and thicker. Also mycorrhizal development was very abundant in the moss and vermiculite, but much less evident in the clay soil. Clay soil packs considerably in a small polyethylene bag apparently reducing the growth of pine roots and development of mycorrhizae.

#### Summary

Pine seedlings grown in sphagnum moss were much taller at planting time, an important aid to survival during the first year in the field.

Time and labor for transporting potted seedlings from the nursery to the field is much less for seedlings in moss than for seedlings in soil.

Although this study included only Honduras pine, hardwoods, among them mahogany (*Swietenia macrophylla*), blue mahoe (*Hibiscus elatus*), plumajillo (*Schizolobium* sp.), and primavera (*Cyristax donnell-smithii*), have also been grown successfully in sphagnum moss.

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